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FARM ANIMALS
TILLAGE AND CULTIVATION

BY A. B. GRAHAM,
Superintendent of Agricultural Extension.

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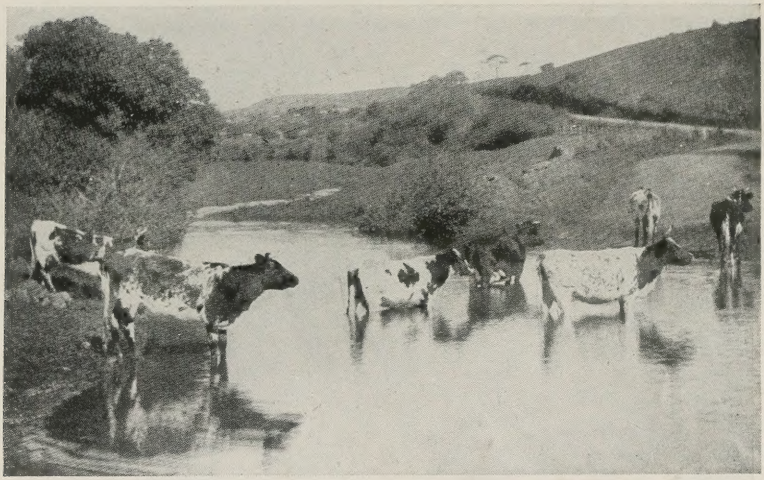

Courtesy of "Our Dumb Animals."

In calm contentment, one and all
Obedient to the evening call,
"Co' Boss! Co' Boss!"

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"Plague! ef they ain't somepin' in work 'at kindo goes ag'in' my convictions!"

This pulication can be secured by writing A. B. Graham, Superintendent of Agricultural Extension, Ohio State University, Columbus, Ohio.

A Vagrant Knight and Lady

Who are they by the roadside,
So splendid and so fair,—
The lady in the purple gown,
The Knight with yellow hair?

And pray how does it happen
That you've lost your coach and pair,—
My lady of the high-born ways,
Sir Knight with yellow hair?

" 'Twas long ago we lost them,"
Said they, "We do not care,
We'd rather have our comrades
Than any coach and pair."

"We love the dusty roadside
And the lowliest flowers there,
For now we're Autumn's children,"
Said the Knight with yellow hair.

Then smiled the gentle lady,
"If you see them anywhere,
Tell them that we do not miss them;
I mean the coach and pair."

So beside the common thistle
And the dusky milkweed pod
Lives the lovely Lady Aster
With her Knight, Sir Goldenrod.

—A. S. C.

Farm Animals

By A. B. Graham.

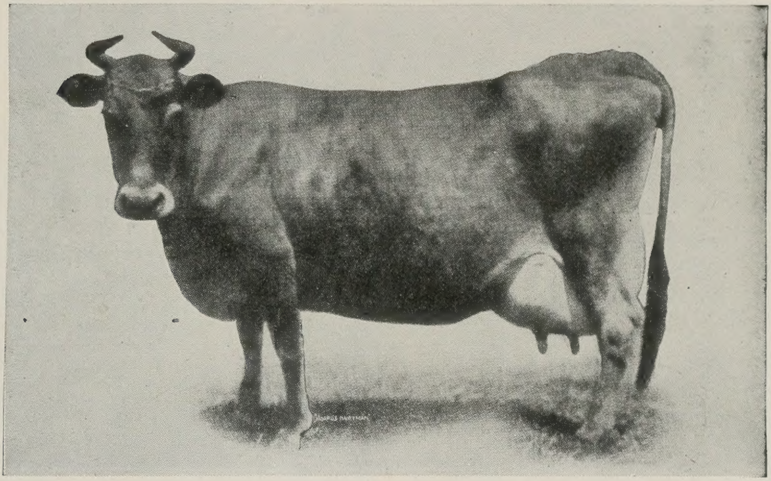
The raising of farm animals represents a high type of agriculture. During the last two hundred years a great improvement in all breeds of farm animals has been made, but only within the last fifty years have the razor-back hog, the dunghill fowl and the pennyroyal cow passed away.

Animals vary from generation to generation. The observant breeder has selected those showing favorable characteristics, such as the giving of a large quanity of milk, the laying of many eggs, taking on of much lean meat, the growing of fine, long-staple wool, or the developing of large, powerful muscles that can be used in drawing heavy loads; one animal may have better feet than the ancestors or a higher and truer step, no horns, a peculiar color, a peculiar drop of ear, or wrinkled skin. Animals showing certain desirable characteristics and color or other marks have been selected as parent stock for the establishing of a breed. Hence we have at present breeds of cattle for beef purposes and others for milk; breeds of horses for pulling heavy loads and others for rapid traveling; sheep for mutton and others for fine, long-staple wool; hogs for large development in lean meat quarters and others for bacon; chickens for egg production and others for meat. If such a variation as a tailless sheep should occur, no doubt the owner

Draft Horses.

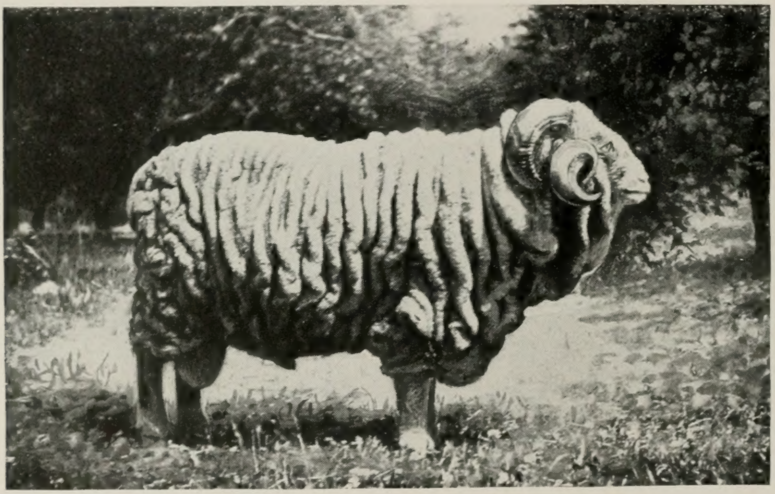
would attempt to fix this characteristic in succeeding generations. There are many hornless cattle that have descended from one having no horns, that was born of parents having horns. The fixing of desirable characteristics results from the careful selection of animals possessing those characteristics. The rest should be sold to the butcher.

There are three distinct types of horses: draft, coach, and roadster. Draft horses usually weigh about 1500 pounds; weight is necessary so that the body when thrown against the collar will give advantage in moving a load; the well developed muscles on a low set body supported by strong legs furnish power to operate the system of levers in the legs, shoulders, and especially the hips. Coach horses as the name indicates, are intended to pull a good sized conveyance loaded with people; they are two or three hundred pounds lighter than draft horses and more speedy. The upright position of the head and style in step are among the desirable characteristics. These horses must be of sufficient size to harmonize with the size of the vehicle and to draw a load of persons at a reasonable speed. The roadster is intended to draw light loads at a rapid speed. Such horses weigh from 800 to 1000 pounds. Lightness of body, length of muscle and lever in legs and hips give speed without tiring the animal as much as if opposite conditions prevailed.



A Good Dairy Cow.

There are two distinct types of cattle, dairy and beef. The dairy type is intended for milk production. Since milk is secreted in the cow's udder from blood that passes through it, three points should be considered in buying a dairy cow;—a girth to give room for a large pumping apparatus, the heart; large veins beneath the body leading back to the heart from the udder, to return blood from which milk has been secreted (this large vein, sometimes called the milk vein, indicates a large artery carrying blood *to* the udder;) and third, large nostrils and depth of lungs which assure a rapid purifying of the blood. No quantity of milk could be produced if there were not a large food receptacle, so the dairy cow has need of a large mouth and a good-sized paunch in which to store food. Dairy cattle have the appearance of being bony. When looked at from the side, the body should appear somewhat like the frustrum of a triangular pyramid laid sideways with one edge downward. The bodies of beef cattle appear much like a rectangular solid.



Wrinkly sheep are bred for their wool.

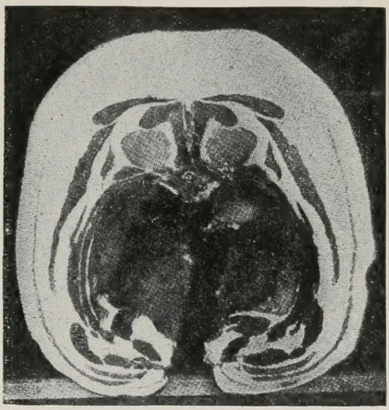
Sheep are divided into two well defined types,—mutton and wool. Usually the mutton type has a large, long body and short, coarse wool; the wool types are shorter and have short legs and the wool is long in some breeds growing on a very wrinkled skin.

There are two types of hogs,—lard and bacon. The first, as the name implies, takes on much fat in its sides and back; the second develops sides and back with an even distribution of lean. From the first, the very fat side-meat is produced; and from the second, the more marketable bacon.

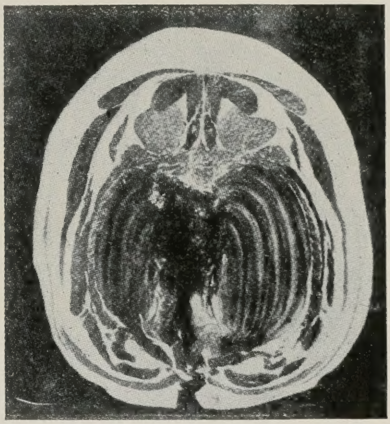
Chickens known as egg layers are not usually very fleshy but are nervous and active. The meat breed is not very active and produces few eggs.

There seem to be two purposes in the keeping of stock on a farm; first that the feeds grown may be converted into energy to do work, as is done by horses, mules, and in some places oxen; and second that they may act as a little shop, or laboratory, as a chemist would call it, to work over the feeds into food and fibre for man and fertilizers for the farm.

The horse that is not doing any work must be put on what is called a maintenance ration; that is, just enough pasture or cured hay to keep up flesh. These foods are largely nitrogenous; lean meat is nitrogenous; one form has been converted into the other. A small quantity of corn or oats may be fed to assist in keeping up the heat of the body. The fat of the germ and the starch surrounding the germ in the corn or oat grain are carbohydrates, quite as much as is a stick of wood or chunk of coal that is added to the stove or furnace to make heat is a carbohydrate. The heat-making process goes on in much the same way; consequently the working animal must be given plenty of food containing starch and fat.



A cross section of a hog of the lard type.



A cross section of a hog of the bacon type.

These foods are found in cereals. If an accumulation of fat is desired, carbohydrates must be fed greatly in excess of what is needed for heat and energy. Lean meat, milk, eggs, and wool are materials containing nitrogen. The entire class of albumenoid foods contains nitrogen. Man uses both animal and vegetable foods containing albumen (proteins is a better term), but animals usually secure the proteins from the green or cured grasses and clovers; however, hogs may be fed casein, a portein, in milk, and chickens may get from lean meat scraps the same food element.

The beef animal that is fed upon grass, clover hay, or ensilage is only converting one form of protein into another. Corn is fed to add enough fat to be distributed in small granules throughout the lean meat. Observe a tender piece of meat from a well-fed animal. The hog that is fed corn exclusively does not get enough nitrogenous food to add the proper quantities of lean meat.

Milk contains two or three times as much casein as it does fat. Casein is one form of protein. Ensilage, alfalfa, and soy bean hay contain large quantities of protein. Corn also assists in forming fat, the cream in milk. A cow fed on a thin ration cannot be expected to yield milk in any quantity or of any degree of richness.

Wheat, oats, and corn contain protein in the grain. In wheat it is called gluten and can be separated by chewing the whole grains and retaining the gluten in the mouth. The flinty part of the corn and oat kernel contains protein but it cannot be separated for examination; however, when the grain is fed to animals, that particular part of the kernel is reproduced in lean meat, casein of milk and albumen of eggs. The protein of clover, grasses and other feeds is converted into lean meat in hogs and cattle and into lean meat and wool in sheep. Even though the proteins cannot be easily separated and examined, when they are in nature's shop or laboratory they are converted into other proteins as if by magic.

Since not all of the foods are completely absorbed in the alimentary tracts of the animal, and since in the elaborating process water has been formed, it is reasonable to expect that nitrogen from protein, potash, phosphorous and some other elements in the grains, leaves, roots, and stems will be cast from the body of these animals and restored to the soil to maintain in a degree the fertility. The growing of animals enables the farmer to convert the products of the farm without great loss of fertility.

TILLAGE AND CULTIVATION

By A. B. Graham

For several hundred years the forked stick was the only implement of tillage, and a piece of brush dragged over the ground and the hoe were the only implements used in cultivation. Crude tillage and cultivation produced little more than unassisted nature. In those days little more than what was needed for home consumption was desired. The present division of labor makes it necessary that the fields produce as much as possible, in order that those who are employed in the shop or in the store may be fed.

Experiments taught the farmer that a well-worked seed-bed brought about results never before attained. Those who first used the iron moldboard were told that it would poison the soil and that it would increase the growth of weeds. It was not poison that made weed growth more luxuriant, but soil conditions were such as were more favorable to the growth of any plant whether a weed or cereal. With the betterment of conditions for plant growth came the necessity for more careful cultivation to kill weeds.

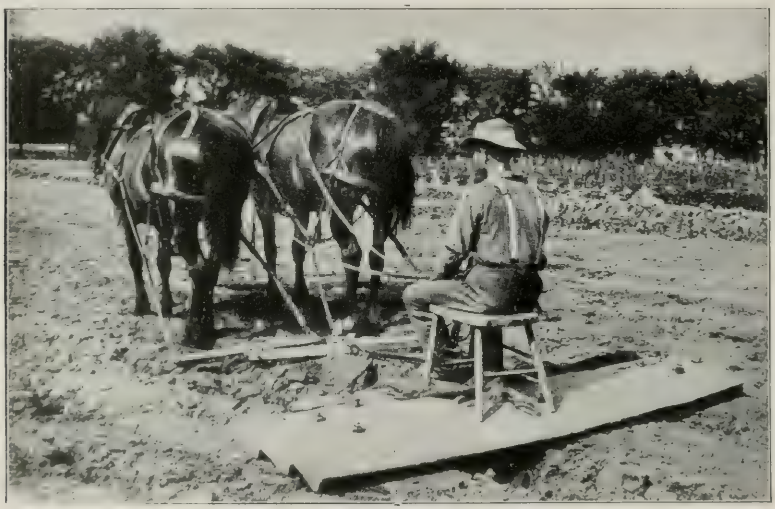
The term "tillage" is usually applied to any method of preparing the seed-bed. Plowing, harrowing, and rolling are considered tillage processes. The term "cultivation" is applied to any of these processes that are performed after the seed is planted and during the growth of the desired plants. In the preparation of the seed-bed, the ground is plowed so that the soil may be loosened to a depth varying from four to fourteen inches. While the soil is loosened to a great depth by plowing, it must be broken into very small particles and firmed again by other tillage implements, the harrow, roller or planker. Plowing permits both air and water to make their way into the soil. All of our farm crops require a free circulation of air for the proper growth of roots and beneficial bacteria. The tree that is filled around too deep or the plant in compact clay soil suffer alike from what may be called "root suffocation."

Good Plowing.

Plowing lowers the water table in most soils and thereby increases the power of the soil to hold film water. Deep plowing on hillsides permits much of the free water to escape from the soil without as much washing as results from shallow plowing. This is not true in the event there is a heavy rainfall.

While the cereals and clover root deep, the greatest root development is within the first foot. Deep plowing increases the feeding area for the first roots and for the later developed root systems. Sub-soiling, plowing deeper than usual, is practiced to increase the root-feeding space. Since it takes time for the elements to convert the newly brought-up soil into proper conditions for seeding, the increase in the depth of plowing should be very gradual, only an inch or two at the beginning of each crop rotation.

The quality of plowing depends as much upon the plow as upon the man following it. A field that has been under cultivation should be plowed with an implement having a moldboard that has sufficient curve to crush or pulverize the soil before it leaves the plow. In sod the moldboard should be long and with less curve; however, there should be enough curve to throw each furrow slice well over against the next one. The sod furrow slice should not be crushed because of difficulties to be met in broken sod chunks.



A Planker fines and firms the soil without packing it.

Good plowing in either cultivated or sod ground means the turning and loosening of all the soil. Cutting too wide a furrow slice results in "cutting and covering" that is, lapping or throwing the furrow slice onto a few inches of unplowed ground. In plowing sod, equally as poor work is done by throwing the furrow slice into a nearly perpendicular position or by throwing it flat into the next furrow. The furrow slice should lie so that it laps over the next one to it. Great loss is suffered by making many dead furrows to act as surface drains.

Harrowing, dragging, rolling, or planking are only continuation processes to pulverize and aerate the soil, to increase the capillarity, preserve the film moisture, and encourage the growth of beneficial soil bacteria by control of soil temperature and ventilation. Harrowing should follow plowing as nearly immediately as possible so that soil moisture may be prevented from escaping, and that the hard parts or clods may be pulverized before they have become hardened by the escape of the soil moisture. Many very successful farmers plow no more soil than can be harrowed the same day. The roller and the planker, because of their weight, press down upon the soil so heavily that the soil particles are brought close together, and incidentally crush clods not broken up by the harrow. The harrow or the planker fines the surface. The so-called disc harrow, when set at the proper angle, packs the soil far below the surface and re-establishes capillarity between the plowed and unplowed soil. By packing the subsurface and the surface by the disc harrow and the roller or the planker, much can be done to retain soil-moisture and to increase the upward movement of film water. Horses hitched to tillage implements help to compact the soil by walking over it. After the soil has been broken up by plowing, it must be firmed to give root contact and support. Time in preparing a seed-bed is always well spent.

The conditions that favor the growth of the desired crop also favor the growth of weeds, which crowd the cereals and take plant food and soil moisture.

When the seed-bed is well prepared and the seed, wheat, corn, clover, radish, turnip, etc.,—is planted, loss of moisture by evaporation and by weed growth must be prevented and air permitted to enter the soil. Cultivation may begin before the plants have appeared above the surface. Harrowing destroys thousands of young weeds and at the same time breaks any crust which a rain and warm sunshine may have caused. When the corn cultivator is first used, it should be set to cultivate deep to allow air to enter the soil and become thoroughly mixed with it; after root development, the cultivation should be shallow, so shallow that the stirring of the soil means nothing more than the making of a mulch or loose soil blanket that will permit air to enter the soil, but will prevent rapid loss of moisture.

SUMMARY

Tillage loosens the upper soil so that it will retain moisture, mixes air into the soil, and makes conditions favorable for root development.

Cultivation continues the process of retaining the moisture in the soil during plant growth, and produces conditions that will cause moisture to move upward by capillarity and will cause free air to circulate in the soil. The destruction of weeds is incidental. A field of corn containing no weeds should be cultivated quite as often as the one containing many.

THE SCHOOL YARD—THE MIRROR OF PUBLIC PRIDE

It is not uncommon to find in the dwelling house and the grounds surrounding it a manifestation of pride in private property. The house and barn, out-buildings and fences show an appreciation of the beautiful. From year to year more good taste is displayed in a greater number of ornamental plantings and in the keeping of the lawn. The pines and spruces, which in an earlier day were set so thickly that they practically hid the residence, have been cut from directly in front of the house so as to make it a central point of observation. Local pride also manifests itself in clean fence rows, graveled driveways, and mowed roadsides. No one will deny that it take some time, pains, and natural or acquired taste to make the homestead appear well to those who live in the community and to the occasional passerby. The farmer is judged more by the appearance of his farm and buildings than by anything else that may come to the stranger's attention. The well-kept home calls forth much favorable comment, but what is said when the front gate hangs by one hinge, the old walnut or apple tree is the roosting place for the turkeys and chickens, the cherry tree furnishes shelter the winter through for the old scythe and the field mower, the undergrowth of locust and rose bushes hides from view what may be a well constructed residence?

A Franklin County school ground. The house would not appear so close to the fence had black piping been used instead of boards

A Miami County school yard. The janitor is employed to mow this front lawn during the summer.

What might be considered an average in pride as to the private property finds itself reflected in the school grounds of that community. The pride of the community as a whole is very often far below that shown in its best private properties. The school grounds of Ohio are but mirrors in which the communities can see their own pride reflected.

Peonies bloom about the time schools close.

Bridal wreath or spirea blooms before schools close.

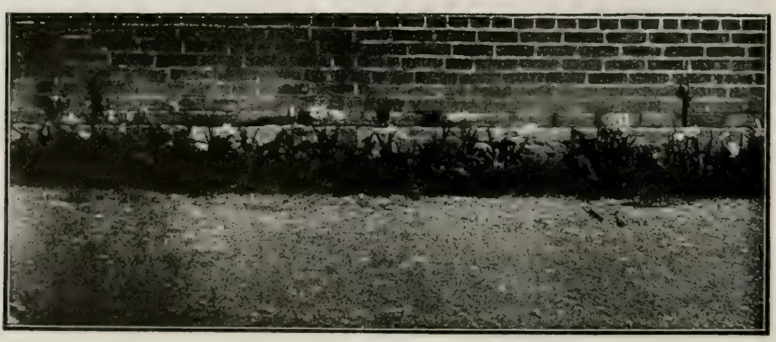
An ash pile that has accumulated for years shows the greatest degree of indifference on the part of both teachers and patrons, for its removal from the front door is an improvement that may be easily made.

Perhaps the most demoralizing agency on rural school property is the improperly cared for out-building. Exposed out-buildings can be screened with a few plantings that in a short time will hide them. It will pay any community to direct its attention to the cleaning up and placing in proper condition of all of these buildings so that those from self-respecting families may not have their sense of common decency and propriety offended. The coalhouse or woodhouse, which furnishes

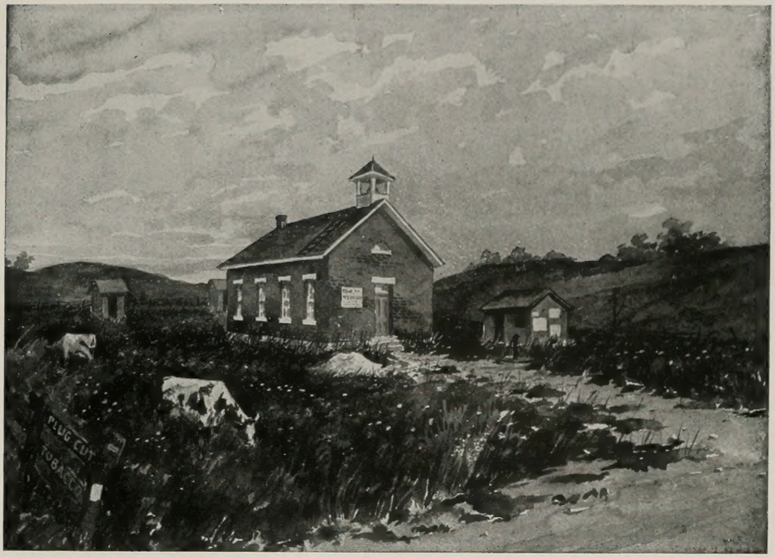
School building not hidden by trees.

a place for the bill-poster to practice his art, should be so far back from the road that he cannot reach it without making an extra effort. Bill-posting of every kind on school property ought to be prohibited. This building is driven to only a few times a year by those who haul fuel and the so-called convenience that comes from its being near the road is more than offset by its detraction from the general appearance of the front of the house and yard. In this day the main paths from the road to the front entrance, to the well curb and perhaps the out-building should be made of such material that they will always be in proper condition to be used as walks.

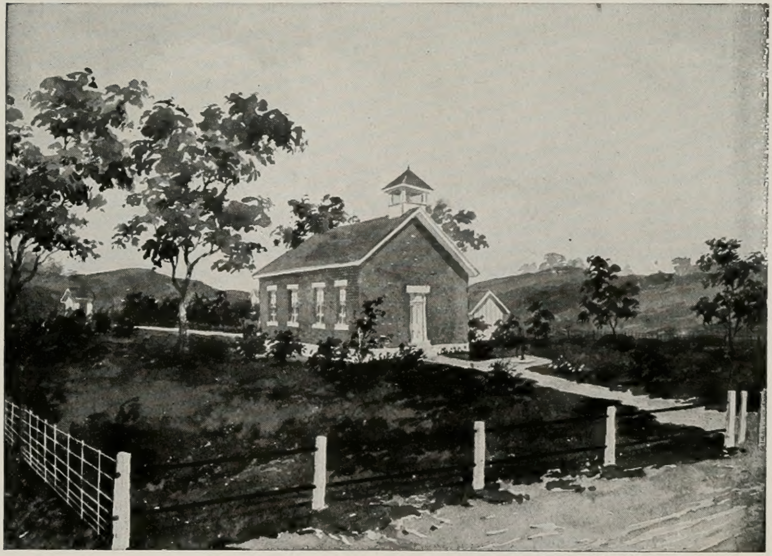
In most places where trees have been planted, the entire front of the house is hidden. If the planting were well to the left and right of the building, making the house the central point, with a grass plot in front, the picture presented to the passerby would be much more pleasing. Low plantings, such as lilacs, snowballs, hardy hydrangeas, flowering quince, and syringas should be planted in masses around the borders and in the corners of the school lot. The lawn mower should be used upon the front of the school yard. Too often these yards are allowed to grow up to tall weeds which are cut down only a week or two before school begins. Any reader of these lines will recall having limped about for a few days with snagged bare feet, which he would not have had if the school yard had been cared for with the same diligence that is displayed on most lawns around our residences. The school yard may be planted in such a way that there will be beautiful pieces of shrubbery in bloom before the school closes, bright colored foliage for the fall, and for winter arched and groined palaces formed by the snow laden branches of the trees and bushes. Such school properties as command the admiration and respect of the occasional visitor of the school as well as the patrons, children and teacher, make better citizens, happier children and more hopeful teachers.



A line of tulips along the foundation.



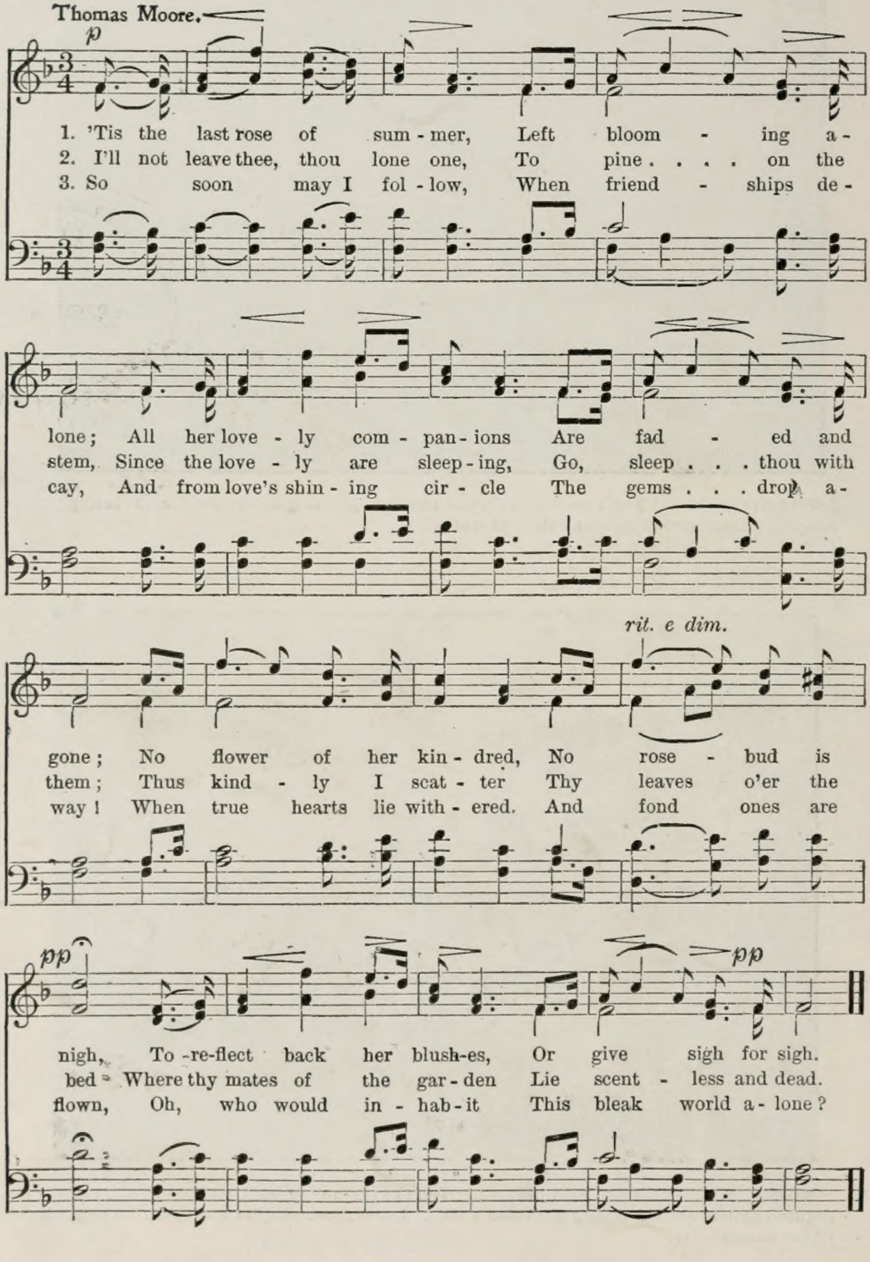
THEN. Neglected yard, posters on woodhouse, a public pasture, ladder to belfry, ashpile, unscreened closets and ill-kept walks.



NOW, Well fenced and well planted. Woodhouse moved back and painted. Closets painted and screened. Nicely graveled walks. Ladder and ashpile removed. The pride of the community.

'Tis the Last Rose of Summer.

Thomas Moore.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1. 'Tis the last rose of sum - mer, Left bloom - ing a -
2. I'll not leave thee, thou lone one, To pine . . . . on the
3. So soon may I fol - low, When friend - ships de -
lone; All her love - ly com - pan - ions Are fad - ed and
stem, Since the love - ly are sleep - ing, Go, sleep . . . thou with
cay, And from love's shin - ing cir - cle The gems . . . drop a -
rit. e dim.
gone; No flower of her kin - dred, No rose - bud is
them; Thus kind - ly I scat - ter Thy leaves o'er the
way! When true hearts lie with - ered, And fond ones are
pp
nigh, To re-flect back her blush-es, Or give sigh for sigh.
bed Where thy mates of the gar - den Lie scent - less and dead.
flown, Oh, who would in - hab - it This bleak world a - lone?
pp